AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A distributed-feedback semiconductor laser, comprising:

an active region for generating the gain of a laser beam,

a diffraction grating formed in said active region, and

front and back surfaces between which said active region is interposed, wherein

the front end surface has a reflectivity of 1 percent or less,

the back end surface has a reflectivity of 30 percent or more when viewed from the back end surface side toward the front,

the coupling coefficient κ of said diffraction grating is 100 cm^{-1} or more,

the length L of said active region is 150 μm or less, ~~and~~

a combination of κ and L provides a $\Delta\alpha/g_{th}$ of 1 or more, where $\Delta\alpha$ is the gain difference between modes and g_{th} is a threshold gain, and

the threshold gain g_{th} is the sum of an internal loss and a mirror loss.

2. (previously presented): The distributed-feedback semiconductor laser as defined in claim 1 wherein the product of said coupling coefficient κ and said active region length L is at least 1 and not more than 3.

3. (previously presented): The distributed-feedback semiconductor laser as defined in claim 1 wherein the active region length L is not longer than Lp where Lp is the length of the active

region provided that the dependency of $\Delta\alpha / g_{th}$ on the active region length L is plotted and $\Delta\alpha / g_{th}$ is on a peak in value.

4. (previously presented): The distributed-feedback semiconductor laser as defined in claim 1 wherein said diffraction grating is a gain coupled structure or loss coupled structure, or

has a structure in which two or three out of the gain coupled, loss coupled, and refractive index coupled structures are mixed, or

is of a structure that is refractive index coupled and $\lambda/4$ shifted.

5. (previously presented): The distributed-feedback semiconductor laser as defined in claim 1 wherein said diffraction grating has a structure that is refractive index coupled and $\lambda/4$ shifted, and the $\lambda/4$ shift position is at a distance backward from the front end of said active region by 75 percent ± 5 percent where the longitudinal direction length of said active region is 100 percent.

6. (previously presented): The distributed-feedback semiconductor laser as defined in claim 1 wherein the back end surface of said active region is formed by etching, and the longitudinal direction length of the entire device including the distributed-feedback semiconductor laser is longer than 150 μm.

7. (original): The distributed-feedback semiconductor laser as defined in claim 6 wherein said device is so structured to include another function region integrated behind the distributed-feedback semiconductor laser through an end surface gap formed by said etching process.

8. (original): The distributed-feedback semiconductor laser as defined in claim 7 wherein said other function region has a light-receiving function.

9. (original): The distributed-feedback semiconductor laser as defined in claim 8 wherein the front end surface of said other function region is formed tilted relative to the back end surface of said active region.

10. (previously presented): The distributed-feedback semiconductor laser as defined in claim 7 wherein said other function region has a reflection function to said active region.

11. (previously presented): The distributed-feedback semiconductor laser as defined in claim 1 wherein the reflectivity of the back end surface of said active region is set to 90 percent or more.

12. (original): The distributed-feedback semiconductor laser as defined in claim 11 wherein the reflectivity of the back end surface of said active region is set to 90 percent or more by providing a high-reflection film on said back end surface.

13. (original): The distributed-feedback semiconductor laser as defined in claim 12 wherein a window that guides light out from said active region is formed on said high-reflection film.

14. (previously presented): The distributed-feedback semiconductor laser as defined in claim 1 wherein materials that constitute said active region comprise at least one selected from the group of A1, N and Sb.

15. (previously presented): The distributed-feedback semiconductor laser as defined in claim 1 wherein the distributed-feedback semiconductor laser has a series resistance of 50 ohms ± 10 ohms.

16. (currently amended): A distributed-feedback semiconductor laser array, comprising a monolithic array of distributed-feedback semiconductor lasers, wherein

each distributed-feedback semiconductor laser comprises:

an active region for generating the gain of a laser beam,

a diffraction grating formed in said active region, and

front and back surfaces between which said active region is interposed, wherein

the front end surface has a reflectivity of 1 percent or less,

the back end surface has a reflectivity of 30 percent or more when viewed from the back end surface side toward the front,

the coupling coefficient κ of said diffraction grating is 100 cm^{-1} or more,

the length L of said active region is 150μm or less, ~~and~~

a combination of κ and L provides a $\Delta\alpha/g_{th}$ of 1 or more, where $\Delta\alpha$ is the gain difference between modes and g_{th} is a threshold gain, and

the threshold gain g_{th} is the sum of an internal loss and a mirror loss, and

the distributed-feedback semiconductor lasers have different wavelengths from one another.

17. (currently amended): An optical module, comprising a distributed-feedback semiconductor laser, wherein the distributed-feedback semiconductor laser comprises:

an active region for generating the gain of a laser beam,

a diffraction grating formed in said active region, and

front and back surfaces between which said active region is interposed, wherein

the front end surface has a reflectivity of 1 percent or less,

the back end surface has a reflectivity of 30 percent or more when viewed from the back end surface side toward the front,

the coupling coefficient κ of said diffraction grating is 100 cm^{-1} or more,

the length L of said active region is 150μm or less, ~~and~~

a combination of κ and L provides a $\Delta\alpha/g_{th}$ of 1 or more, where $\Delta\alpha$ is the gain difference between modes and g_{th} is a threshold gain, and

the threshold gain gth is the sum of an internal loss and a mirror loss.

18-20. (cancelled).

21. (previously presented): A distributed-feedback semiconductor laser as defined in claim 1, further comprising an external reflector.

22. (cancelled).

23. (currently amended): An optical module, comprising a distributed-feedback semiconductor laser array, wherein

the distributed-feedback semiconductor laser array comprises a monolithic array of distributed-feedback semiconductor lasers, and

each distributed-feedback semiconductor laser comprises:

an active region for generating the gain of a laser beam,

a diffraction grating formed in said active region, and

front and back surfaces between which said active region is interposed, wherein

the front end surface has a reflectivity of 1 percent or less,

the back end surface has a reflectivity of 30 percent or more when viewed from the back end surface side toward the front,

the coupling coefficient κ of said diffraction grating is 100 cm^{-1} or more,

the length L of said active region is 150μm or less, ~~and~~

a combination of κ and L provides a $\Delta\alpha/g_{th}$ of 1 or more, where $\Delta\alpha$ is the gain difference between modes and g_{th} is a threshold gain, and

the threshold gain g_{th} is the sum of an internal loss and a mirror loss, and

the distributed-feedback semiconductor lasers have different wavelengths from one another.